OREGON FLORA *Newsletter*

VOLUME 11, NUMBERS 1&2 OREGON STATE UNIVERSITY FEBRUARY/JUNE 2005

Spotlight on OFP volunteers

by Linda Hardison

The Oregon Flora Project has progressed to its current state due to efforts of the many volunteers who have contributed to its development. The various skills and backgrounds people have brought to the Project have enriched the products we are striving to create and, as reflected in the interviews below, our volunteers seem to benefit as well. To the many individuals who have donated thousands of hours, we extend our sincere thanks. The Oregon Flora Project could not exist without you!

Being the spouse of an OFP staff member seems to be a conduit to volunteerism as in the case of **Jeff Cook**, programming expert and husband of database manager Thea. Jeff began in May 2005 to help develop forms for the checklist database. "It seems there is a niche for me in database development—there are some tricks the staff is either unfamiliar with or lacking the time to implement, so I'm happy to be able to help," Jeff said. He began his career as a software engineer in 1984, working for various firms to customize and add functionality to software programs. Most recently Jeff has been implementing web displays for database information. Jeff's lack of background in botany has presented no problems in his work for the Oregon Flora Project; in contrast, his fresh perspective has often led to improved ways to express and link the checklist data. "When I have had instances of misunderstanding a botanical concept, Thea's straightened me out," he joked. "Plus, I've learned a

See spotlight on volunteers, page 16

Photo: Courtesy of Jeff Cook

Jeff Cook, OFP volunteer, on top of South Sister.

The authorship of *Mimulus cusickii*

by Wayland L. Ezell

Based on the International Code of Botanical Nomenclature, the correct authority—i.e., the author of the scientific name—for *Mimulus cusickii* is Volney Rattan, not C. V. Piper. The author has been listed as Piper since 1906, so why make a change now?

In the mid-1800s George Bentham proposed *Eunanus* as a new generic name for a group of dwarf monkeyflowers which includes the Cusick monkeyflower. E. L. Greene used this genus, but Asa Gray and other taxonomists placed all herbaceous monkeyflowers in genus *Mimulus*, using *Eunanus* as a section name (i.e., a taxonomic subdivision of a genus.)

Mimulus bigelovii var. *ovatus* was named by Asa Gray in his 1886 *Synoptical Flora of North America* (page 445) for a monkeyflower found from western Nevada, northward to the upper Columbia River. The following year, E. L. Greene described a new species, *Eunanus cusickii*, in the journal *Pittonia* (volume 1, pages 36-37) based on collections by William Cusick and Thomas Howell, specimens he considered to be different from *Mimulus bigelovii* A. Gray var. *ovatus* A. Gray. Greene stated, "The species is a most beautiful one, lacking the villous pubescence of *E. bigelovii* and otherwise different." He did consider his new species to be the same as Gray's variety "in part," meaning some of the collections cited by Gray were *E. cusickii*.

In the *Flora of the State of Washington* (page 508), Piper (1906) created the new combination, *Mimulus cusickii*. He agreed with Greene (1887) that the *cusickii* species was different, saying, "This species was included by Dr. Gray in *M. bigelovii* A. Gray, but it seems sufficiently distinct." Piper listed the type locality for *M. cusickii* as "Malheur River, Oregon. Collected by Cusick." This new combination came to be written as *Mimulus cusickii* (Greene) Piper in the *Gray Herbarium Index*, *Index Kewensis*, and all the regional floras and manuals before 1993. David Thompson was the first to list Rattan as the authority for *Mimulus cusickii* when he treated *Mimulus* for *The Jepson Manual* (1993). This change in authorship was necessary because of the discovery of an 1898 manual of botany written by Volney Rattan, a teacher of botany at the State Normal School in San Jose, California.

Joseph Monachino of the New York Botanical Garden published a paper in 1963 discussing Rattan's manual, which according to Monachino, includes thirty-four species names not listed in the *Gray Index* or *Index Kewensis*. A number of these names are new combinations of which Rattan is effectively the author, even though it is uncertain whether he intended to formally publish these changes as in a standard taxonomic

See Mimulus cusickii, *page 18*

Spotlight on volunteers, continued from front page

little systematics along the way." Jeff feels that this is an exciting time to develop a flora with today's new computer technology. "It has been very rewarding to help develop the databases which make the Flora Project more effective. Internet technology will make this flora much more interactive and accessible than any previous flora, and I value knowing that my volunteer efforts will help botanists do their work more efficiently."

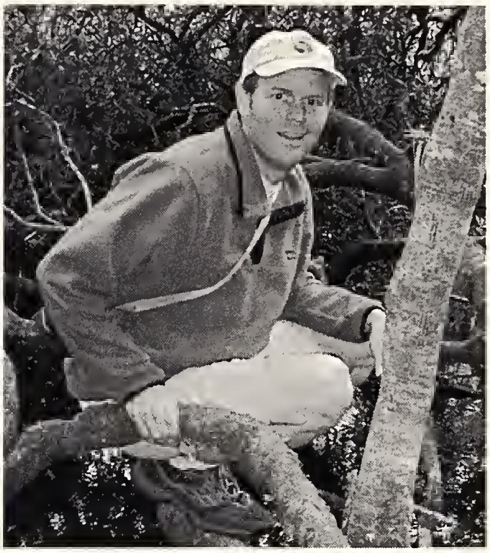
Photo: Courtesy of Troy Maddux

Troy Maddux, OFP volunteer, at Siltcoos Lake.

A familiar face around the herbarium, **Troy Maddux** moved to Corvallis from Albuquerque in July 2003. In college, botany courses lured him away from a zoology focus. "I find the dance between humans and plants intriguing. Taxonomy captures these interactions—it reflects both people's history with an organism through the names assigned to a plant as well as the relationships between that plant and its relatives." With his background as a botanist and database administrator at the University of New Mexico Biology department, Troy was interested in connecting with the botanical community at OSU. "Volunteering for the Oregon Flora Project was a way to become acquainted with the plants and botanists of Oregon," he said. "I've been very impressed with the way the Flora Project approaches volunteerism: there is training for each task, the expectations for volunteers are made clear, and there are opportunities to interact with interesting people." Troy's technical background has allowed him to contribute in many areas. He has performed quality control for the Atlas by comparing herbarium specimens to database records, verified the identification of photographs, and helped develop the morphology database for the multiple-entry key. He says of his volunteer experience, "It has repaid me very nicely in my work for the Oregon Department of Agriculture and as an instructor at Linn-Benton Community College. I've met nice people, become acquainted with lots of interesting plants, and been able to work on an incredible project."

Don Roberts of Salem, has been an OFP volunteer since 2002. As an internist, he practiced medicine in Salem until the 1990s. Upon retirement, Don welcomed the opportunity to continue an interest in woodworking, "a solitary pursuit," but also wished to volunteer within a group. In 1995, Don attended a conference on native plants at which Scott Sundberg outlined the goals of the Oregon Flora Project, "a big project on the leading edge of several different facets of botany, as well as technology." Don's interest was piqued, and he sought more information about the Project and its progress from Salem participants. "My inquiries received glowing reports," Don said, "which made it all the more interesting to me. When I saw a request for volunteers, I applied, was interviewed, and happily I passed." Don has most recently assisted with the Photo Gallery by selecting and photographing a representative herbarium specimen of each taxon which was lacking a file photo of the living plant. How does Don describe his volunteer experience? "I've enjoyed working with people in all stages of their 'botanical lives'—from novices to emeritus faculty—who are contributing their expertise to this project. I have also developed skills using databases and imaging technology that I could not have done outside of this volunteer opportunity."

If you would like to join the volunteers who are contributing to Oregon's botanical heritage, contact Linda Hardison at hardisol@science.oregonstate.edu or (541) 737-4338.

Thanks to the following who have volunteered during 2005: Connie Battaile, Wilbur Bluhm, Dick Brainerd, Henrietta Chambers, Caitlin Coberly, Jeff Cook, Leila deLaubenfels, Jim Duncan, Jereme Frank, Bob Frenkel, Mary Garrard, Clay Gautier, Glenn & Barbara Halliday, Tanya Harvey, Rhoda Love, Tom Kaye, Kate Keck, Troy Maddux, Stephen Meyers, Lynda Moore, Keir Morse, Don Roberts, Charlene Simpson, Ruth M. Smith, Elize Stander, Tara Stark, Kuuipo Walsh, Barbara Wilson, and Don Zobel.

Erythronium oregonum logo and masthead designed by Tanya Harvey.

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In memoriam: Julian Battaile, 1925-2005

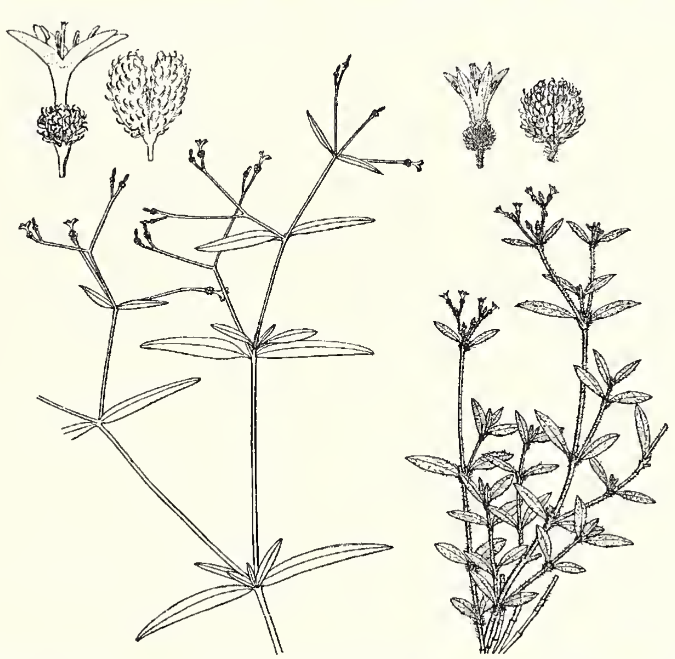
by Linda Hardison

We extend our condolences to the Battaile family upon the August 24th death of Julian Battaile of Ashland. A true Renaissance man, Julian was a retired chemistry professor who shared with others his gifts of music, writing, cooking, and botany. He and wife Connie's support of the Flora Project included adopting a block in southwestern Klamath County, of which they developed an intimate knowledge. Over the past five years they submitted comprehensive species lists to the Atlas project, and collected and identified 670 taxa from the area. Julian's quiet graciousness will be deeply missed.

A distant disjunction in Oregon's flora

by Kenton L. Chambers

In any book on the flora of a region, one expects to find a section discussing the "phytogeographic relationships" of the region's genera and species. In my younger days, I remember being amused by some of these presentations, because they seemed to come down mainly to the observation that, for example, some of the species had affinities with more northern floras, some with more eastern floras, and some with more southern floras. At least for Pacific Coast states such as Oregon and California, there was no mention of "more western floras," due to the obvious oceanic barrier. Today, however, the tracing of geographical affinities of species has become much more sophisticated and has been elevated to the science of "phylogeography"—the melding of phylogenetic cladograms with the plate-tectonic history of identifiable geofloristic regions. Some nifty computer algorithms have been designed to facilitate these studies, and I am sure that today's students of plant geography do not have the rather dismissive attitude towards it that I once had.



Morphological comparison of habit, flower, and fruit of Kellogia chinensis *(right) and* K. galioides *(left). Courtesy of Botanical Society of America,* American Journal of Botany.

One of the features of plant distribution that still bugs the proponents of phylogeography, however, is the propensity of some species for long-distance dispersal—that is, migration by jumps from one region to another rather than by smooth, step-by-step progression. These jumps may appear to be random, lacking any correlated pattern. It is rewarding to find, however, that some patterns in long-range dispersal do exist, and that they can be placed in a scientific (i.e. predictable) context. I earlier wrote in the *Newsletter* about the 2,400+ mile disjunction in the tarweed tribe of Asteraceae, between California and Hawaii. The resulting magnificent evolutionary radiation of the Hawaiian silversword alliance is known to have its ancestry in a now extinct hybrid tarweed of California. Its seeds were carried over the ocean by some anonymous bird around 5 million years ago. As more Hawaiian genera are given detailed molecular examination, similar examples continue to be found—in families Asteraceae, Caryophyllaceae, Lamiaceae, Campanulaceae, and others—some with ancestors from western North America and some from Asia. The age of these Hawaiian disjunctions may be truly remarkable. For example, in Campanulaceae, the evolution of a group of genera with flowers coadapted for pollination by the birds known as Hawaiian honeycreepers must have begun at least 20 million years ago. The island to which this ancient dispersal event occurred is now gone, eroded away to nothing but an underwater seamount.

I recently read a paper on plant molecular phylogeny which renewed the possibility that an Oregon species has affinities to a "more western flora," clear across the Pacific Ocean. The species in question is *Kelloggia galioides*, a familiar creeping, white-flowered herb of coniferous forests in central and eastern Oregon. It was named in 1874 by John Torrey, of New York, in honor of the pioneer California naturalist Albert Kellogg (1813-1887). A member of family Rubiaceae, the plant takes its specific name from its resemblance to *Galium* or bedstraw. The original specimens were collected near Walla Walla, probably on June 28, 1841, by W. D. Brackenridge of the U. S. Exploring Expedition commanded by Charles Wilkes. The publication of Brackenridge's discoveries was delayed more than 30 years by administrative bungling in Washington, D.C. Nonetheless, it is surprising that such a common species had not been collected by earlier botanical explorers such as Lewis, Douglas, Nuttall, Tolmie, or Frémont. The honoree, Dr. Kellogg, resided in San Francisco and was a founder of the first scientific society west of the Rockies, the California Academy of Sciences. His botanical travels, principally in the 1860s and 70s, included Alaska and much of central California.

As was pointed out by Lauramay Dempster (1975), it had been overlooked by most writers of California floras that a second species of *Kelloggia, K. chinensis* Franchet, was described in 1892 from southwestern China. This plant differs from *K. galioides* (see figure) in its hairy stems and leaves, more compact inflorescences, smaller flowers, and larger, toothed stipules. The study by Nie et al. (2005), referenced below, set out to determine whether the Chinese plant was closely related to *K. galioides,* or might in fact belong to a different genus. The DNA of three chloroplast genes was sequenced; that is, the "letters" of the DNA alphabet, A, T, C, and G, were listed in order for each gene. Fourteen other species of Rubiaceae were sequenced for comparison with the two kelloggias. Using the computer algorithm PAUP, a phylogenetic analysis of the gene similarities and differences produced a cladogram (tree) of relationship, and in this tree, the two *Kelloggia* species always stood together. Had they come on separate branches of the tree, mixed in among some of the other genera, we would be justified in saying that they are generically separate, but such was not the case.

Having determined that the two species are best classified as a single genus, the authors performed a phylogeographic analysis, to see whether the most likely origin of *Kelloggia* was in Asia or in North America. That is, where had the ancestor of the two species existed, and was the dispersal direction therefore west to east, or east to west? By this analysis, not only was the original home of the genus assigned to Asia, but the most likely time of divergence of the ancestors of *K. galioides* and *K chinensis* was dated at 5.41+/-2.32 million years ago—near the boundary between the Miocene and Pliocene epochs! Such a degree of accuracy, it must be understood, depends on the methods and assumptions used in studies like this one. Still, I hope that readers will be as impressed as I was with how today's genetic techniques can provide such a precise understanding of species relationships.

The authors point out that an ancestral divergence in late Miocene is too recent for the American species of *Kelloggia* to have

See Disjunction in flora, page 18

Disjunction in flora, continued from page 17

migrated step-by-step from Asia over the Bering Land Bridge, and they favor long-distance dispersal as the more likely explanation of the disjunction. Dispersal by birds, for example, would be favored by the hooked bristles on the fruits, similar to those in the cousin genus *Galium*. It appears that elements of randomness and unpredictability will continue to arise in studies of plant distribution, whether we like it or not.

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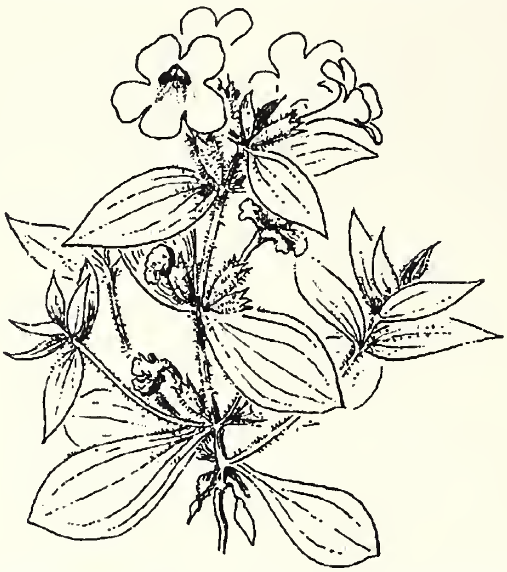
Mimulus cusickii, *continued from front page*



Mimulus cusickii *(Greene) Rattan. Illustration by Jeanne R. Janish from Hitchcock, et al.,* Vascular Plants of the Pacific Northwest. *Courtesy of University of Washington Press.*

paper. His *West Coast Botany, an Analytical Key to the Flora of the Pacific Coast* was written for the educational use of his students, not as a means of proposing botanical novelties. However, the book has historical significance because Rattan took some species described earlier by Greene and transferred them to different genera. He made only indirect reference to Greene's publications.

In 1956, the International Code of Botanical Nomenclature mandated that new combinations published on and after 1 January 1953 must indicate the basionym (i.e., the specific epithet being transferred) together with its author and must indicate the date and place of publication. Indirect reference to the basionym is allowed, however, for new combinations made at an earlier date. Rattan's approach was indirect, at best, yet Monachino concluded that Rattan's new combinations were validly published according to the applicable rules. One of Rattan's new combinations was *Mimulus cusickii*, based on Greene's 1887 description of *Eunanus cusickii*, and his work has eight years priority over Piper's later publication of the same name.

Mimulus cusickii is centered in Central Oregon, on exposed sandy or rocky soil reaching the interior plateau of western Idaho, with limited distribution in northwestern Nevada (Washoe County) and northeastern California (Modoc County). Along the eastern slopes of the Oregon Cascades, it may be sympatric with *Mimulus nanus* Hook &. Arn., being distinguished by its mephitic odor, acuminate or cuspidate leaf tips, and weakly bilabiate corolla with nearly equal lobes. *Mimulus nanus*, on the other hand, has strongly bilabiate corollas with the upper lip erect and longer than the lower.

This story does not end with a change in authorship for Cusick's monkeyflower. The family status of the genus also is undergoing revision. Historically, *Mimulus* is placed in the family Scrophulariaceae; however, DNA sequence studies by Beardsley and Olmstead (2002) identified a clade that contains *Mimulus*, *Phryma*, and other genera. They assign this clade family rank, and because of priority, place *Mimulus* and the other included genera in family Phrymaceae, one that may be unfamiliar to western botanists. Until now, it has been a family with a single species, *Phryma leptostachya* L., lopseed, of eastern North America and east Asia.

Editor's note: Wayland Ezell was a former student of Kenton Chambers. Sadly, we have learned that Wayland died of cancer in February 2005.

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Project news

by Linda Hardison

The release of the Oregon Plant Atlas, featured in our last newsletter, has been a milestone for the Flora Project; however, it is by no means a stopping point for us. The summer of 2005 has been busy, with energy focused on two equally large projects: the Checklist and the Digital Field Guide.

Thanks to the efforts of Thea Cook, Katie Mitchell, and volunteer Jeff Cook (see *Spotlight on Volunteers*), restructuring of the database that houses OFP's synonymized checklist of plant names is almost complete. This makes data maintenance and updating much easier, and allows us to track the history and reasoning behind name changes. We are using this system daily to track checklist contributors' recommendations and to make updates, activities that are central to the entire Flora Project.

The Digital Field Guide (DFG) will provide the online presentation of *all* types of OFP data—photographs, localities, and technical information. The user will be able to select a desired subset of information and download it to a computer or device that does not have an Internet connection. This software is in the final stage of development.

The morphology database (a database of characters possessed by groups of plants and/or individual taxa) has seen phenomenal growth this summer. OSU students Stephen Meyers and Mandy Wood, and Linfield College intern Tara Stark have developed a data set of characters associated with Oregon plant

See Project news, page 19

Project news, continued from page 18

Character illustrations for the Digital Field Guide by Rena Schlachter. Left: bulb, right: leaves alternate.

families. Hundreds of sketches have been prepared by Rena Schlachter to illustrate many of these characters (see examples above). This is the basis for the DFG's electronic key, which will allow users to identify an unknown plant to family. It also represents the beginning of data gathering for the final Flora.

The visual component of the Digital Field Guide will also prove stunning. Images of 4,000 herbarium specimens (thanks largely to the photographic efforts of volunteer Don Roberts) and over 1,800 color photographs will initially populate the Photo Gallery component of the DFG.

A new link for the Flora Project has been forged with OSU's Professional Science M.S. Program in Applied Systematics directed by Aaron Liston. In August, Michelle Buonopane, the first graduate of this program, presented her internship work on refinements to the Atlas mapping program as well as a business analysis of the Oregon Plant Atlas. Congratulations, Michelle!

This article summarizes the amazing progress that has occurred within the Oregon Flora Project in recent months. Equally amazing is the modest funding with which we have accomplished these advances, and what we have to sustain us in the near future. The Atlas, the Digital Field Guide, and the Checklist are valuable research tools that need financial support for further development and maintenance. Please consider what you—and your employer, if appropriate—can contribute to keep this resource freely available to the public. Donations are always welcomed, and will be especially appreciated during our upcoming fund-raising campaign this autumn and winter!

How can I contribute?

Donations to the Oregon Flora Project are a critical part of our operating budget. Your contributions help pay the salaries of our staff and students, as well as all newsletter expenses.

There are two ways to donate to the Oregon Flora Project: (1) with a check payable to the Oregon State University Foundation, attn: Oregon Flora Project; and (2) through the Friends of the Oregon Flora Project, with a check payable to the Native Plant Society of Oregon, attn: OFP.

Why two ways? Donations directly to the OSU Foundation alert donors of benefactor opportunities offered through OSU. Donations to NPSO bypass this connection, as all monies are transferred anonymously to the Flora Project. The support tendered by NPSO also serves as a strong endorsement of the OFP as we apply to foundations for support. In both cases, all funds go to the Flora Project, and your contributions are tax-deductible.

With your contribution, please let us know if you do *not* wish to have you name listed in our "Thanks" column, and if you would like to be added to our *Oregon Flora Newsletter* mailing list.

Mail your check to:
Oregon Flora Project
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Corvallis, OR 97331-2902

Thanks

We have received contributions from the following individuals since June 2005: Jim Duncan & Elaine Plaisance, Mary Heckenlaible, Garnet Jex, Kenneth Lodewick, Jay & Cecilia Lunn in memory of Sara Barnum, Don Mansfield & Rochelle Johnson, Mary Moffat, Lona Pierce, Portland Garden Club, Armand Rebischke; Charlie, Greg, and Mark Sundberg; Norman & Donna Sundberg, Charles & Clara Trainer, Thomas Warren, and a generous anonymous donor. We also thank the State NPSO and its Portland Chapter.

The following have made donations to the Oregon Flora Project in honor of Scott Sundberg: Maya Abels, Nancy Ahnert, Nelda Akerson, Barry & Aliki Anderson, Richard & Joyce Anderson, Bruce Baldwin, Tom & Joy Ballinger, Sara Barnum, Connie & Julian Battaile, Lawrence Bisno, Ziona & Herbert Bisno, Alfred & Dorothy Bloom, Richard Brainerd, Jean Brinton, Eloise Brown, Beth & Robert Campbell, Nancy Chapman, Kenton & Henrietta Chambers, Lynda Ciuffetti & Tom Wolpert, David & Janet Dobak, Barbara Dudman, Nancy Eid, John Fowler & Margit Foss, J. D. Franklin, Sam & Jenny Friedman, John Fylstra, Maradel Gale, Tom Galli, Steven Ginzbarg, Andrew Gray, Gordon & Jeanne Hall, Glenn & Barbara Halliday, Sue Hamilton, Steven & Leslie Hartman, Tanya Harvey, Noel & Patricia Holmgren, Jenifer Hutchinson, Anne Jaster, Jimmy Kagan, Doramay Keasbey, Mary Korns, Adele Krusenstjerna, Richard Krusenstjerna, Frank Lang, John & Joanne Lattin, Aaron & Sara Liston, Richard & Isabelle Littman, Glen & Rhoda Love.

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From both a personal and professional perspective, I extend a heartfelt thanks for your recognition and support of Scott and what he held so dear. –Linda Hardison

Photo: Dennis Wolverton, the Oregon Stater

Scott Sundberg in the Herbarium, 2001.

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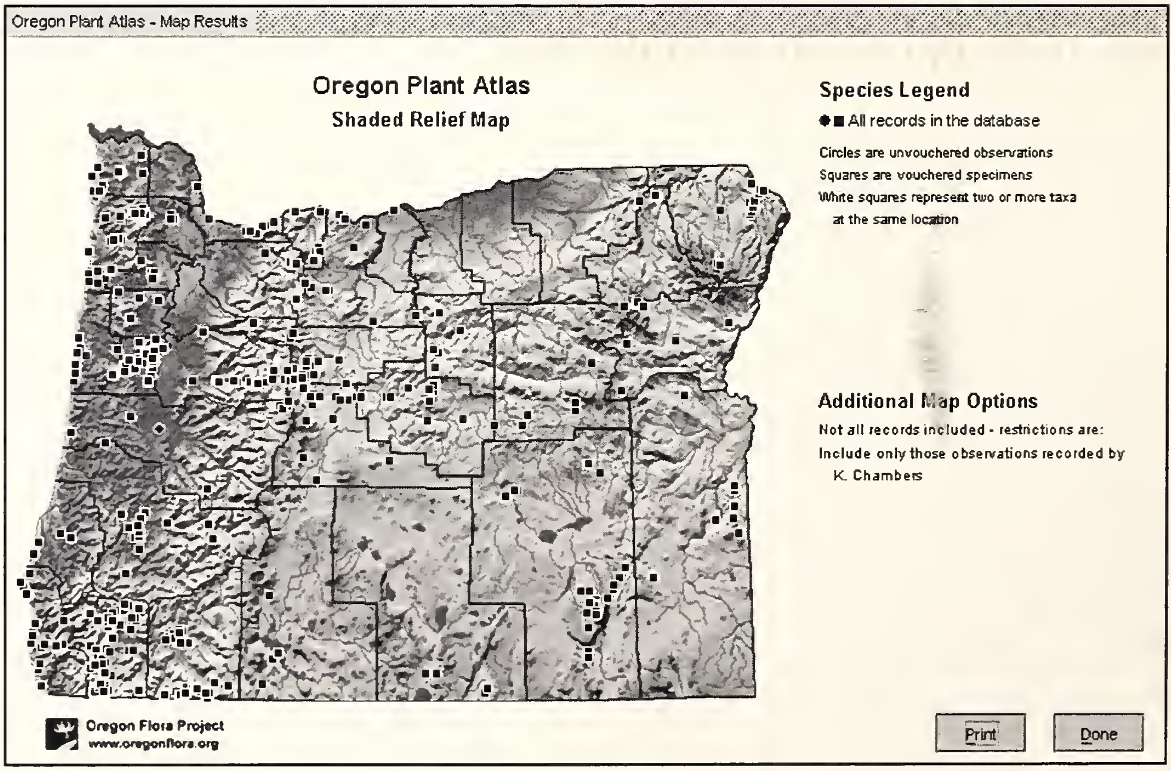

Oregon Plant Atlas - Map Results

Oregon Plant Atlas

Shaded Relief Map

Species Legend

●■ All records in the database

Circles are unvouchered observations
Squares are vouchered specimens
White squares represent two or more taxa at the same location

Additional Map Options

Not all records included - restrictions are:
Include only those observations recorded by K. Chambers

Professor Emeritus Kenton Chambers has botanized in virtually every Oregon county as revealed by an Oregon Plant Atlas (http://www.oregonflora.org/oregonplantatlas.html) map of his known collecting sites. Ken has been a full-time volunteer for the OFP for the past ten years and has collected nearly 6,500 botanical accessions to date. He celebrated his 76th birthday in September.

OREGON FLORA *Newsletter*

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Funding crucial for Flora progress

by Linda Hardison, Project Coordinator

In the decade that the Oregon Flora Project has been in existence, we have experienced amazing progress and growth. Success has come through the combined efforts of our dedicated staff and the volunteerism that reflects the project's commitment to public involvement.

We can point with pride to numerous accomplishments in the past year:

- In March we made the Oregon Plant Atlas available to the public. This online mapping program allows users to create maps showing the location of ~383,000 occurrences of Oregon plants with details of each sighting.
- Our collaboration on a grant with the OSU Herbarium has resulted in the databasing and georeferencing of virtually all Oregon herbarium specimens at Oregon State University. This is an outstanding resource available to all plant enthusiasts as well as anyone interested in the lives of Oregon's collectors.
- Significant improvement has occurred within the Checklist through restructuring the database, streamlining data entry, and adding the capacity to trace the history of each plant name.
- The prototype of our Photo Gallery will provide the public with nearly 6,000 images of live plants and herbarium specimens.
- The latter will be coordinated with the release of our Digital Field Guide in the coming months.

See Funding, page 22

Photo: Rhoda Love

OFP Staff. Left to right: Katie Mitchell, Rena Schlachter, Thea Cook, and Linda Hardison.

Increased access to the OSU Herbarium specimen database

by Aaron Liston

When Microsoft named their database software "Access" they made a prescient choice. This software is central to all of Oregon State University Herbarium's efforts to facilitate public "access" to our collection of plant specimens. This is the software we use to enter, maintain, and archive all our specimen label information. The specimen database now contains over 150,000 records (including non-Oregon specimens), and the process of retrospective data capture for all Oregon specimens is nearly complete. In addition to providing novel insights into the history and composition of the collection (see box, page 24), the database serves as a central data resource for the Oregon Flora Project.

The specimen database is now accessible online in four formats, each with a distinct purpose and audience. The specimen information has been available for several years in the Oregon Vascular Plant Database. Here users can obtain complete label information for over 4,500 Oregon species, subspecies, and varieties, represented by 122,162 specimens. It was last updated in April, 2005. It provides access to the most extensive label and annotation data for each specimen, and is heavily utilized by students, researchers, and others.

Newsletter readers are probably most familiar with the specimen database as used in the Oregon Vascular Plant Atlas. Here the specimen records are combined with observational data to produce distribution maps for most Oregon plant taxa. The same set of specimen records is used in both the online Database and Atlas. These have undergone extensive quality checking before being placed online, including standardization of the primary collector and county names. In addition, the taxonomic nomenclature reflects the

See specimen database, page 24

About that date above the mailing address...

If you check your mailing address, you'll notice we have added a month and year above your name. This is the date the Oregon Flora Project last received a contribution from you. If you have donated recently, thank you *very* much! If it's been a while, it would mean so much to us to have your financial support. Your dollars pay for the production of this newsletter, as well as the basic research behind it. Help keep these newsletters appearing in your mailbox—contribute now!

Funding, continued from front page

In the last year, this progress has occurred with our four staff members funded at an average of less than one-half time. Our current employment level is equivalent to only 1.65 full-time positions, and our monthly operating budget is ~$7,500. Under these stringent circumstances, it is astonishing to consider the volume of work that the OFP staff and volunteers have accomplished in the past twelve months.

However, to maintain even our present minimal level of staffing, we need your help. Without additional funds, the OFP will be unable to provide to the public—*free of charge, as it always has been*—the accurate information that users have come to expect. Maintenance of existing OFP information and the addition, improvement, and curation of botanical data require adequate financing. As we continue to seek funding from granting agencies and Oregon State University, we need the sustained financial support of all of you who have an interest and investment in the success of our Flora Project.

Think now what can be accomplished if we move ***beyond*** our current level of activity with an ***increase*** in our operating budget. We can make additional botanical information accessible to all users by adding details to each facet of the project. With your generous donation:

- We will be able to complete and publish our Checklist of all plant species known to occur in Oregon.
- We will be able to extend the multiple entry key component of our Digital Field Guide so that users may identify plants to family, genus, and species.
- We will be able to add thousands of photographs of wildflowers to our Photo Gallery.
- Most significantly, we will be able to advance on the specific task of completing the *Flora of Oregon*.

As you enjoy this issue of the *Oregon Flora Newsletter*, or perhaps peruse the Atlas mapping program, or consult with one of our staff for a particular nugget of information, think for a moment of the many individuals (including most likely yourself!) whose efforts have made these resources possible. We are extremely grateful for the support of the many Friends of the Oregon Flora Project, and ask for your financial assistance at this time to help us ascend to a new level of activity within the Project and bring about the completion of the new *Flora of Oregon*. **Please give as generously as you are able at this holiday time.**

All contributions are tax-deductible. Checks can be made out either to NPSO or the OSU Foundation; please include "Oregon Flora Project" on the memo line, and mail to: Oregon Flora Project, P.O. Box 402, Corvallis, OR 97339-0402.

Erythronium oregonum logo and masthead designed by Tanya Harvey.

The Oregon Flora Newsletter is published three times a year by the Oregon Flora Project and the Oregon State University Herbarium. The Editor is Rhoda Love and the Production Assistant is Rena Schlachter.

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The Checklist:
foundation of the new Flora of Oregon

by Linda Hardison

Before we can write the new *Flora of Oregon*, we must first complete the Checklist. Why? Because the job of the Checklist is to provide the framework of scientific names for Oregon's vascular plants; thus it is the foundation of the entire Flora Project.

The overall goal of the Checklist is to identify every vascular plant growing in Oregon that is native, introduced, or has become established in a natural setting. A second goal of the Checklist is to associate each plant with its correct and defining scientific name, and to account for all other names that have ever been associated with that plant. If you have identified a plant under one name in one flora, and have then been unable to find it under that name in a different flora, you are well aware of the problem that the Checklist attempts to address. The inconsistency across multiple references, and the lack of one comprehensive flora for all of Oregon were indeed two of the factors that motivated Scott Sundberg to begin work on the new *Flora of Oregon*. It is clear that completion of the Checklist is an essential step in the preparation of the Flora.

We have designed the electronic component of the Checklist so as to understand clearly the characteristics of a given plant; accordingly, irregardless of its name, we refer to each unique plant in our database as a "concept." This captures the idea of what a particular plant is and accommodates multiple names that may be associated with it. In the Checklist, we assign each botanical concept a unique number. Therefore several scientific names may have the same number, and the unique number lets us know that each of those names refers to the same plant (See back cover).

Another accomplishment has been the development of the Checklist's research component. A research table records

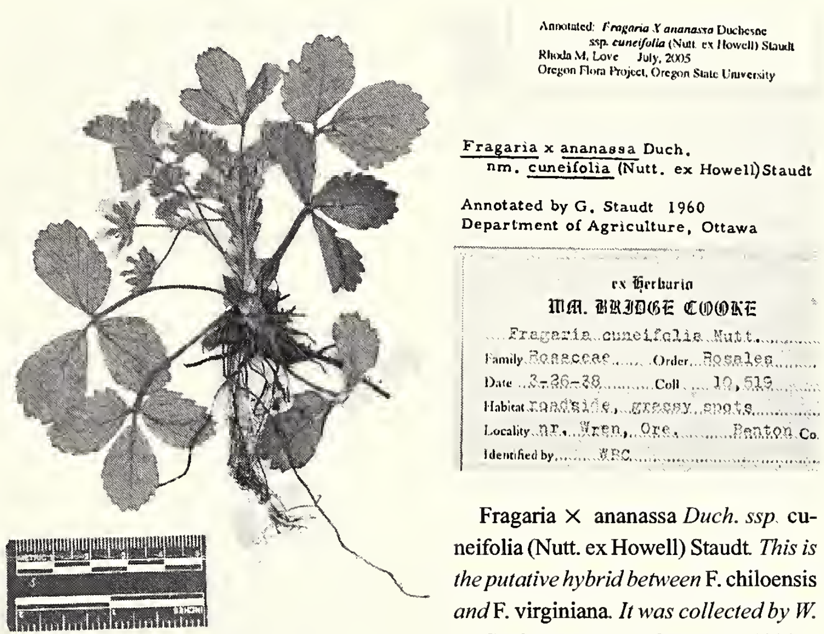
See Checklist, page 25

Oregon's strawberries: some genetic complexity

by Rhoda Love

Strawberries have not been overlooked by song writers, poets or taxonomists. John Lennon and Paul McCartney wrote the song, "Strawberry Fields Forever," and Kipling mentioned the fruit in his Victorian-era poem, "An English Garden." Systematists have not ignored strawberries either. Linnaeus gave the genus *Fragaria* its name, from the Latin word for the fruit – *fragum*, and he collaborated with A. N. Duchesne on the earliest treatment of the genus. In our own time, Germany's Günter Staudt has devoted 40 years to the study and classification of the world's strawberries.

It is Staudt's detailed 1999 monograph of the American strawberries that I have followed in my treatment for the Oregon Flora Project. According to this treatment, we have three species and five subspecies of *Fragaria* in Oregon. Older names such as variety *crinita* have been superceded by new combinations, and we need to watch for a recently recognized hybrid entity that may be new to many *Newsletter* readers. For added complexity, Staudt tells us we can expect to find back-crosses between the hybrid and one or both parents, and he also mentions the possibility of genes from cultivated strawberries mixing with our wild taxa.



Annotated: *Fragaria X ananassa* Duchesne
ssp. *cuneifolia* (Nutt. ex Howell) Staudt
Rhoda M. Love July, 2005
Oregon Flora Project, Oregon State University

Fragaria x ananassa Duch.
nm. cuneifolia (Nutt. ex Howell) Staudt

Annotated by G. Staudt 1960
Department of Agriculture, Ottawa

ex Herbario
WM. BRIDGE COOKE

Fragaria cuneifolia Nutt.
Family Rosaceae Order Rosales
Date 3-26-38 Coll 10,519
Habitat roadside, grassy spots
Locality nr. Wren, Ore. Benton Co.
Identified by WBC

Fragaria × ananassa *Duch. ssp.* cuneifolia (Nutt. ex Howell) Staudt. *This is the putative hybrid between* F. chiloensis *and* F. virginiana. *It was collected by W. B. Cook, near Wren, Oregon in 1938.*

Starting with the familiar Oregon species, our old friend mountain strawberry retains the name *Fragaria virginiana*, however Staudt places the Oregon plants in subspecies *platypetala*. Other subspecies of *F. virginiana* occur elsewhere in North America. *F. virginiana* subspecies *platypetala* grows in the Oregon Cascades and westward and also in northeast Oregon. We know it by the terminal leaf tooth which is usually shorter than the adjacent teeth. The leaves are often bluish-green. Mountain strawberry is octoploid with 2n = 56.

Another old strawberry friend is *Fragaria vesca*, woods strawberry. Most *F. vesca* in Oregon belong to subspecies *bracteata*. Staudt has submerged Hitchcock's variety *crinita* here, however he recognizes another subspecies, *F. vesca* ssp. *californica*, in California which just gets over the border into Curry County. Woods strawberry generally has the terminal leaf tooth longer than the lateral teeth; leaf color is bright green. *F. vesca* is diploid with 2n =14. It is sympatric with *F. virginiana* in many parts of Oregon but is not known to hybridize with the latter, no doubt due to the difference in chromosome number.

Our much-loved coast strawberry or beach strawberry, *Fragaria chiloensis*, keeps its familiar name, but Staudt recognizes two subspecies which he separates on the basis of the stem hairs. My simple Key to Oregon Strawberries in this issue indicates that subspecies *lucida* has appressed-ascending hairs, while subspecies *pacifica* has hairs which are dense and spreading. Staudt's map shows the subspecies interspersed along the Oregon coast. My studies of OSC and WILLU herbarium sheets indicate that the differences may not be as clear cut as the key implies; however, I am following Staudt's treatment at this time. Beach strawberry is octoploid with 2n = 56.

The major strawberry surprise is that Staudt recognizes a natural hybrid between *F. chiloensis* and *F. virginiana* for our state. Recall that both beach strawberry and mountain strawberry have 56 chromosomes. The *F. chiloensis* × *F. virginiana* entity was discovered early in Oregon history by Thomas Nuttall near the mouth of the Columbia River and has at times been known as *F. cuneifolia*. Now it is called *Fragaria* × *ananassa* ssp. *cuneifolia*. Interestingly, the *chiloensis* × *virginiana* combination is also that of the cultivated strawberry, *Fragaria* × *ananassa* ssp. *ananassa*, grown on farms and in gardens.

Alert readers will immediately realize that since strawberries are cultivated throughout much of Oregon and no doubt escape rather regularly, we may have both "wild" and "tame" hybrid individuals existing in various places. In addition, there are apparently no genetic barriers preventing the putative hybrids from back-crossing with either *chiloensis* or *virginiana*. In other words, one may encounter strawberries with a mixture of genes from either parent in almost any location where parents and hybrids coexist. Staudt includes a nice discussion of this situation in his 1999 monograph which is well worth reading by anyone who has been puzzled by the intermediate appearance of some of our plants.

One need not be a poet, songwriter or professional taxonomist to appreciate Oregon's Fragarias. From seashore to fields, woods, and mountains our strawberries brighten the seasons with their pretty leaves, cheery flowers and jewel-like fruits. The taxonomic complexity of the *chiloensis-virginiana* group simply adds a soupçon of spice to the mix.

Reference: Staudt, Günter. 1999. Systematics and geographic distribution of the American strawberries. *University of California Publications in Botany*. Vol. 81. UC Press, Berkeley.

Specimen database, continued from front page

draft Oregon Flora Checklist. Several thousand specimens bear names that are now considered synonyms of other taxa in the checklist. These specimens appear online under the checklist name, but would be found in the herbarium under the original name. A "virtual annotation" alerts the user to this fact.

Two new access points to the OSU Herbarium specimen database have been introduced this fall. The Global Biodiversity Information Facility (GBIF) is an international effort aimed at increasing access to primary data on all organisms. GBIF does not maintain or curate data, but rather serves as a portal to 142 institutions in 39 countries. Over 70 million records (specimens and observations) are currently available, and the number of data providers and records is constantly growing. The key to GBIF is that each data provider posts their data in a standardized, relatively streamlined format. This allows for efficient searching across separate databases, and provides a single entry point for access to numerous information sources. However, there are some aspects of GBIF that limit its usefulness. First, the standardized format does not accommodate all types of information. For example, the annotation history of specimens is not available. Second, GBIF currently supports only searches based on the scientific or common name of a plant. Thus one cannot query the database for all specimens from a specific county or collector. Finally, although GBIF does utilize a nomenclatural framework, it is not as comprehensive, nor well-researched for Oregon plants, as the draft Checklist used in the Oregon Atlas and Specimen databases. Although the number of records provided by the OSU Herbarium represents only 0.2% of those available on GBIF, our data can have a dramatic impact for some taxa. For example, prior to the OSU Herbarium data, there were only four records for the Oregon endemic genus *Kalmiopsis*; now there are 31!

The most significant specimens in the OSU Herbarium are the types. These are the specimens upon which the names of new taxa are based. Valid description of a new taxon requires the designation of a type specimen. If there is ever any doubt about the application of a name, the type specimen and the original description must be consulted. Type specimens in the OSU Herbarium have been described in dozens of different journals published over the past 125 years. In collaboration with the OSU Valley Library, we have placed images of 1210 type specimens of Oregon plants, together with copies of their original descriptions, in the Digital Collections of the library. Several other herbaria have placed images of their type specimens online, and many libraries have made botanical literature available on the web. However, this is the first example, as far as we are aware, of a single site that combines the two resources, both photos and descriptions. The result is a unique research resource for taxonomists studying the flora of Oregon and the Pacific Northwest. It also allows the general public to browse these historic specimens and read the accompanying descriptions. These bring a new dimension to the specimens, and provide an opportunity for enhanced appreciation of Oregon's plant diversity. Four thousand additional photos of OSU herbarium sheets will soon be available to the public electronically as part of the Oregon Flora Project Photo Gallery.

The increased access to the OSU Herbarium specimens would not be possible without the exceptional efforts of several people. Scott Sundberg of the Flora Project was coauthor of a successful grant proposal which funded much of the data entry and Flora Project labor provided a head start to the entire endeavor. Elize Stander and Clif Johnson contributed their database and computing expertise to the placement of our data on GBIF. Valley Library staff members Michael Boock, May Chau, Terry Reese and Ryan Wick were central to the types project, and students Diana Wageman and Philip Vue compiled the literature and photographed the specimens, respectively. Data managers Thea Cook and Katie Mitchell were pivotal to both efforts. Links to all of the above resources can be found at: *oregonstate.edu/dept/botany/herbarium/db.php*

Specimen database discoveries in the OSU Herbarium

- Oldest Oregon specimen: *Montia parvifolia*, collected by Elihu Hall in 1871. This specimen was received from the Smithsonian Institution in the 1920s (based on the accession number). It is the only specimen in our herbarium collected by this botanical pioneer, for whom *Scoliopus hallii*, *Viola hallii* and several other species were named.

- Most collected species: *Mimulus guttatus* with 453 Oregon specimens! *Delphinium nuttallianum* (342), *Collinsia parviflora* (342) and *Lupinus arbustus* (335) are distant runners up.

- The five most prolific collectors: Morton Peck (20,652 specimens), Louis Henderson (10,402), Georgia Mason (4,445), Lilla Leach (4,122), and Leroy Detling (3,837). Morton Peck was a Willamette University professor, while the other four were associated with the University of Oregon. The most prolific Oregon State University collector is the current curator, Richard Halse (3,664 specimens).

- The most productive year: 1927 with 5,849 specimens. By coincidence, Peck, Henderson & Leach all collected more specimens that year than any other, over a thousand each!

- The two persons who have identified the most specimens: Henrietta Chambers (32,009) and Kenton Chambers (29,035). Most of this tremendous contribution has been as volunteers for the Oregon Flora Project.

- Most collected county: Lane with 12,714 specimens.

- Least collected county: Columbia with 353 specimens.

Key to Oregon Strawberries

We have 5 taxa of wild strawberries in Oregon plus one hybrid taxon which is intermediate between its putative parents.

1. Leaves noticeably thick and coriaceous, strongly reticulate-veiny beneath; strictly coastal................................*Fragaria chiloensis*
    2. Hairs on stem appressed-ascending ....ssp. *lucida*
    2. Hairs on stems dense and spreading ....ssp. *pacifica*
1. Leaves generally thinner, not restricted to the coast
    3. Terminal leaf tooth usually shorter than lateral teeth
        4. Leaves thin, green to bluish-green, Oregon Cascades and westward, also in Blue and Wallowa mountains.............. ....*Fragaria virginiana* ssp. *platypetala*
        4. Leaves somewhat leathery; hybrids intermediate between *F. chiloensis* and *F. virginiana*; to be expected where parental species are sympatric........................ ....*Fragaria* × *ananassa* ssp. *cuneifolia*
    3. Terminal leaf tooth usually longer than lateral teeth ....*Fragaria vesca*
        5. Leaflets ovate or obovate; common in western Oregon, Wallowa and Blue Mountains ....*ssp. bracteata*
        5. Leaflets approximately round; extreme southwest Oregon (Curry County).....................ssp. *californica*

Fragaria chiloensis *ssp.* pacifica. *Illustration by Rena Schlachter, OFP Illustrations Editor.*

How can I contribute?

Donations to the Oregon Flora Project are a critical part of our operating budget. Your contributions help pay the salaries of our staff and students, as well as all newsletter expenses.

There are two ways to donate to the Oregon Flora Project: **(1)** with a check payable to the Oregon State University Foundation, attn: Oregon Flora Project; and **(2)** through the Friends of the Oregon Flora Project, with a check payable to the Native Plant Society of Oregon, attn: OFP.

With your contribution, please let us know if you do *not* wish your name listed in our "Thanks" column, and if you would like to be added to our *Oregon Flora Newsletter* mailing list.

Mail your check to:
Oregon Flora Project
P.O. Box 402
Corvallis, OR 97331-2902

Checklist, continued from page 22

published references to a checklist name, and indicates discrepancies between the OFP checklist entry and the data found in a given reference. We are beginning with the nine basic floras and field guides, such as Peck and Hitchcock, that cover portions of Oregon, and we will eventually include journal articles and monographs. This information is extremely helpful to Checklist and Flora contributors, as it puts at their fingertips comparative information which can assist in their nomenclatural decision-making. This valuable cross-reference will also be available to the general public when the Draft Checklist is released in Spring 2006.

The Oregon Flora Checklist currently contains 10,251 plant names at the species, subspecies, or varietal level. Each plant name is assigned a single nomenclatural status: either accepted, synonym, evaluate, or excluded. It is up to the checklist author to decide which status he or she will attribute to each name. As suggested by the category 'evaluate,' further study of specimens or the literature may be needed to make a final decision on a proposed name.

True to the grassroots nature of the Oregon Flora Project, it is a group of skilled volunteers who do the research and decision-making for each Checklist treatment. The 18 members of the Checklist Advisory Board and the Checklist Project Leaders (see pg. 22) are overseeing the process, and many of these individuals have contributed numerous treatments. Each author is responsible for preparing the treatment for an entire genus; the 972 genera of Oregon plants have been distributed to over 40 authors for completion. One of our most prolific contributors of Checklist manuscripts is Advisory Board member Henny Chambers; thus far she has prepared treatments for 248 genera, from *Ajuga* to *Zizia*. The Checklist has benefited from the expertise of botanists around the state and beyond—for example, Clifford Schmidt of Salem prepared the treatment of *Ceanothus*, and Dr. Jim Reveal of Montrose, Colorado has submitted his work on the buckwheat genus *Eriogonum*. We give hearty thanks to all the Checklist contributors who are moving us ever closer to our final goal, the new *Flora of Oregon*.

Thanks

We have received generous contributions from the following individuals since July 2005:

Dana Abel & Charles Quinn, Betty E. Bahn, Paula Brooks, Rob Castleberry, Glen Cole, Dennis & Jean Fahey in honor of Mike and Nancy Fahey, Sam Friedman, Deven Holmgren, Mary Y. Hough, John Koenig, Cynthia D. Lord, Rhoda and Glen Love, Dan Luoma, David & Jaylene McClurg, Kathy Merrifield, William Noble, John Syring, Mary Alice Willson, Desi & Karen Zamudio, and the Emerald and Siskiyou Chapters of the NPSO. The following memorial gifts have also been received: Dallice Mills and Michael VanWinkle in memory of Scott Sundberg; Louise Godfrey and Shep & Babs Wilson in memory of Sara Barnum; the Umpqua Valley Chapter of NPSO in memory of member Sandra Stiltner.

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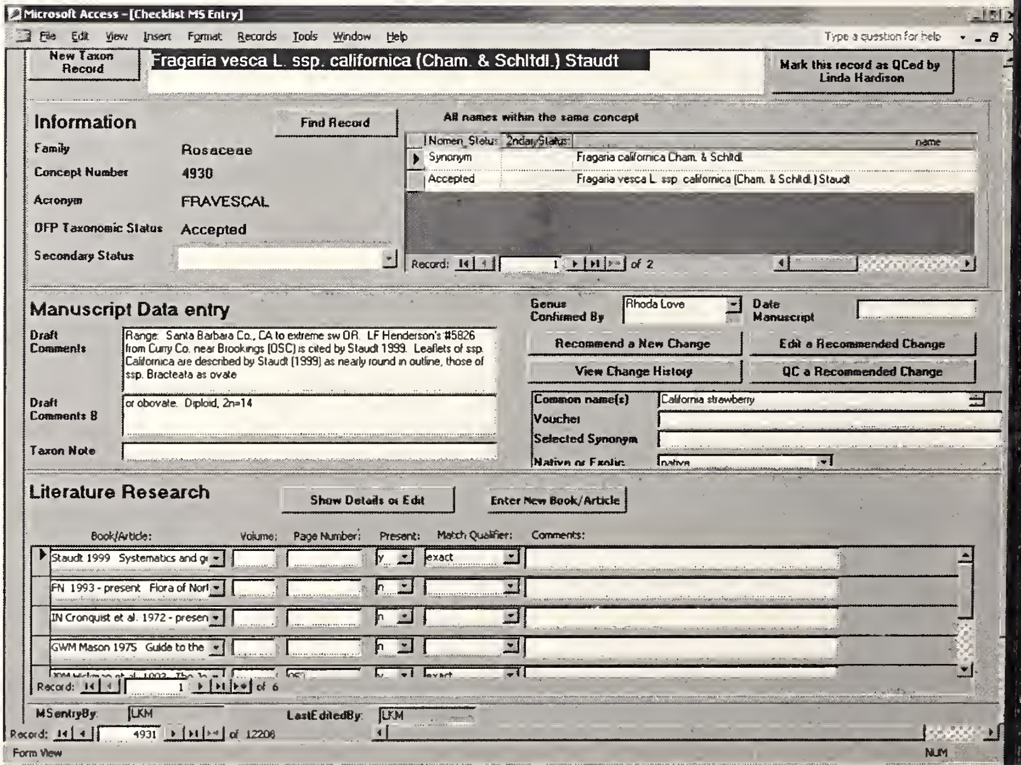
Did you know?

France's Antoine Duchesne (1747-1827) gave the cultivated strawberry its present name *Fragaria ananassa,* leaving us to wonder about the meaning of the specific epithet which is something of a tongue-twister. Reference books tell us:

- The word *ananas* is French for "pineapple."
- The word *anassa* is Greek for "queen."

Putting these together as Duchesne may have done in the word *ananassa* might have been his playful attempt to describe the strawberry as fruit fit for a queen.

(We would be glad to hear other interpretations.)



Fragaria vesca L. ssp. californica (Cham. & Schltdl.) Staudt

Information

Family: Rosaceae
Concept Number: 4930
Acronym: FRAVESCAL
OFP Taxonomic Status: Accepted
Secondary Status:

All names within the same concept

Nomen_Status	2ndaryStatus	name
Synonym		Fragaria californica Cham. & Schltdl.
Accepted		Fragaria vesca L. ssp. californica (Cham. & Schltdl.) Staudt

Record: 1 of 2

Manuscript Data entry

Draft Comments: Range: Santa Barbara Co., CA to extreme sw OR. LF Henderson's #5826 from Curry Co. near Brookings (OSC) is cited by Staudt 1999. Leaflets of ssp. Californica are described by Staudt (1999) as nearly round in outline, those of ssp. Bracteata as ovate
Draft Comments B: or obovate. Diploid, 2n=14
Taxon Note:
Genus Confirmed By: Rhoda Love
Date Manuscript:
Common name(s): California strawberry
Voucher:
Selected Synonym:
Native or Exotic: native

Literature Research

Book/Article:	Volume:	Page Number:	Present:	Match Qualifier:	Comments:
Staudt 1999 Systematics and g			y	exact	
FN 1993 - present Flora of Nort			n		
IN Cronquist et al. 1972 - presen			n		
GWM Mason 1975 Guide to the			n		

Record: 1 of 6

MSentryBy: LKM
LastEditedBy: LKM
Record: 4931 of 12206

This view from the checklist database illustrates many of the categories of data gathered fo each taxon (see article on page 22).